IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | |
|---|---|
| Appln. No: | 10/632,051 |
| Applicant: | Steven Gronemeyer |
| Filed: | July 30, 2003 |
| Title: | SERIAL RADIO FREQUENCY TO BASEBAND INTERFACE WITH POWER CONTROL |
| TC/A.U.: | 2618 |
| Examiner: | Nguyen Duc M. |
| Confirmation No.: | 9974 |
| Notice of Appeal Filed: | October 29, 2010 |
| Docket No.: | SIRF-104US |

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

SIR:

Appellants hereby request consideration and reversal of the Final Rejection dated July 2, 2010, and the Advisory Action dated October 18, 2010, of claims 1-33.

This Brief is presented in the format required by 37 C.F.R. § 41.37, in order to facilitate review by the Board. In compliance with 37 C.F.R. § 41.37(a)(1), this Brief is being filed within the time allowed for response to the action from which the Appeal was taken or within two months from the date of the Notice of Appeal, whichever is later.

The fees for filing a Brief in support of an Appeal under 37 C.F.R. § 41.20(b)(2), have been previously paid. Any difference between the current fee and the amount previously paid required in connection with the filing of this Brief are provided herewith.

## I. REAL PARTY IN INTEREST

The real Party In Interest in this matter is SiRF Technology, Inc. by virtue of an assignment recorded on December 23, 2003, at Reel/Frame 014818/0651.

## II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences related to the subject matter of this Appeal.

## III. STATUS OF CLAIMS

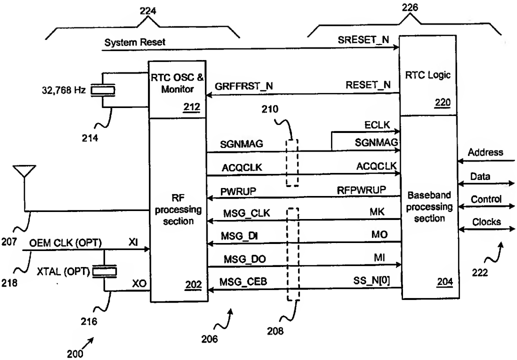
Claims 1-33 are pending in this application and stand rejected. Claims 1-33 are appealed. Of the claims on appeal, claims 1, 8, 14, 22 and 28 are independent. This is an appeal from the Final Office Action dated July 2, 2010 rejecting claims, 1-33. This Final Office Action provides an explanation of how the pending claims 1-33 would be rejected.

## IV. STATUS OF AMENDMENTS

The present application is under final rejection. Applicant filed an Amendment After Final Rejection on September 14, 2010 which was not entered. The claims as appealed do not include these amendments.

## V. SUMMARY OF INVENTION

The invention provides radio frequency (RF) power control messaging, as well as related methods of providing RF power control messaging, over an interface between an RF processing section and a baseband processing section. The interface supports general purpose bi-directional message transmission between the RF processing section and the baseband processing section. The interface further supports transmission of satellite positioning system (SPS) signal samples between the two processing sections without adding undue complexity to the interface.




Referring to Figure 2 of the application (shown above), an interface 206 includes a message serial interface 208 and a data serial interface 210. The message serial interface 208 provides for serial communication of general purpose messages bi-directionally between the RF section 202 and the baseband section 204. In contrast, the RF section 202 employs the data serial interface 210 to transmit SPS signal samples to the baseband section 204.

The message serial interface 208, as shown in Figure 2, includes the message-in signal line (labeled MSG_DO/MI), a message-out signal line (Labeled MSG_DI/MO), a message clock signal line (MSG_CLK/MK), and a slave select signal line (labeled MSG_CEB/SS_N[0]). The labels on the message signal lines indicate the direction of data flow from the perspective of the RF section 202/baseband section 204. For example, the message-out signal line (MSG_DI/MO) carries message bits input to the RF section 202 and output by the base band section 204.

A power control signal (labeled PWRUP/RFPWRUP) may be provided to control whether certain portions of the RF section 202 are powered-up. The power control signal may be connected, for example, to a voltage regulator enabled pin in

the RF section 202 to provide a coarse power-up/power-down control over the majority of the circuitry in the RF section 202. The RTC OSC & Monitor section 212 is separately powered so that it can continue to provide a clock to the baseband section 204. The baseband processing side may include an RTC logic section 220. The RTC logic section 220 accepts the input clock generated by the RTC OSC & Monitor section 212 as an aide in determining the current time as well as SPS location.

Messaging used by the serial interface for controlling the different portions of the RF chip 102 is shown in TABLES 4 and 10on pages 19-21 and 27-28 of Applicants' patent application. TABLES 4 and 10 include messages for controlling power to the fractional N synthesizer, PLL and divider chain, first LNA, Oscillator, ACQCLK-Select mux and ACQCLK driver, front end power for 2nd low noise amplifier through A/D converter. Tables 4 and 10 further include, separate messages for testing purposes, such as to partition the reception chain in the RF section 202 for testing, specifying the synthesizer charge pump output and test modes, specifying the divider for PLL feedback.

Now turning to the independent claims, claim 1 recites: a radio frequency (RF) to baseband interface (206, FIG. 2, and paragraph [0023]) providing power control over an RF section (202, FIG. 2, and paragraph [0023]) that processes RF signals and that is coupled to a baseband section (204, FIG. 2, and paragraph [0023]) that processes baseband signals, the interface comprising, a bi-directional message interface (208, FIG. 2 and paragraph [0028]) for communicating a power control message (FIG. 2, Tables 4 and 10 and paragraphs [0054], [0063], [0066] and [0067]) from the baseband section (206, Fig. 2 and paragraph [0023]) to the RF section (202, FIG. 2, and paragraph [0023]); and a data interface (210, FIG. 2, and paragraph [0028]) for communicating data from the RF section (202, FIG. 2, and paragraph [0023]) to the baseband section (206, FIG. 2 and paragraph [0023]), wherein the RF section (202, FIG. 2, and paragraph [0023]) includes a register (paragraph [0046]) for receiving the power control message wherein the devices to be controlled by the power control message (Tables 4 and 10 and paragraphs [0054], [0063], [0066] and [0067]) are coupled to the register.

Similarly, independent method claim 8 recites: a method for controlling power in a radio frequency (RF) section (202, FIG. 2, and paragraph

[0023]) that processes RF signals and that is coupled to a baseband section (206, FIG. 2 and paragraph [0023]) that process baseband signals, the method comprising the steps of: setting a power control bit (Tables 4 and 10 in specification and paragraphs [0054], [0063], [0066] and [0067]) in a power control message (Tables 4 and 10 in specification and paragraphs [0054], [0063], [0066] and [0067]); and communicating the power control message (Tables 4 and 10 in specification and paragraphs [0054], [0063], [0066] and [0067]) over a message interface (208, Fig. 2 and paragraph [0028]) from the baseband section (206, FIG. 2 and paragraph [0023]) to the RF section (202, FIG. 2 and paragraph [0023]) where the power control message is assoicated with power consumption of the RF section (paragraph [0067]).

Independent claim 14 recites: an RF front end (224, FIG. 2, and paragraph [0024]) for a satellite positioning system receiver (200, FIG. 2, and paragraphs [0022-0023]), the front end comprising: an RF processing section (202, FIG. 2, and paragraph [0025]) comprising an RF input (207, FIG. 2, and paragraph [0025]) for receiving satellite positioning system signals; and an RF to baseband interface (206, FIG. 2, and paragraph [0023]) coupled to the RF processing section (202, FIG. 2, and paragraph [0025]), the interface comprising: a bi-directional message interface (208, FIG. 2, and paragraph [0028]) for communicating messages between the RF processing section (202, FIG. 2, and paragraph [0025]) and a baseband processing section (204, FIG. 2, and paragraph [0025]), that receives a power control message (Tables 4 and 10 in specification and paragraphs [0054], [0063], [0066] and [0067]) from the baseband processing section (204, FIG. 2, and paragraph [0023]) wherein the power control message is associated with power consumption of the RF processing section (paragraph [0067]); and a data interface (210, FIG. 2, and paragraph [0028]) for communicating data from the RF processing section (202, FIG. 2, and paragraph [0023]) to the baseband processing section (204, FIG. 2, and paragraph [0023]).

Independent claim 22 recites: a baseband back end (226, FIG. 2, and paragraph [0024]) for a satellite positioning system receiver (200 FIG. 2, paragraphs [0022-0023]), the back end comprising: a baseband processing section (204, FIG. 2, and paragraph [0025]) comprising at least one address, data, and control line (222, FIG. 2, and paragraph [0024]) for communicating with a digital device; and an RF to

baseband interface (206, FIG. 2 and paragraph [0023]) coupled to the baseband processing section (204, FIG. 2, and paragraph [0025]), the interface comprising: a bi-directional message interface (208, FIG.2, and paragraph [0028]) for communicating messages between an RF processing section (202, FIG. 2, and paragraph [0023]) and the baseband processing section (204, FIG. 2, and paragraph [0023]), including communicating a power control message (Tables 4 and 10 in specification and paragraphs [0054], [0063], [0066] and [0067]) to the RF processing section (202, FIG. 2, and paragraph [0023]) where the power control message (Tables 4, 10 in specification and paragraphs [0054], [0063], [0066] and [0067]) is associated with power consumption of the RF processing section (paragraph [0067]); and a data serial interface (210, FIG. 2, and paragraph [0028]) for communicating data from the RF processing section (202, FIG. 2, and paragraph [0023]) to the baseband processing section (204, FIG. 2, and paragraph [0023]).

Turning to the final independent claim, claim 28 recites: a satellite positioning system receiver (paragraphs [0022-0023]) comprising: an RF front end (224, FIG. 2, and paragraph [0024]) comprising an RF processing section (202, FIG. 2, and paragraph [0023]) and an RF input (207, FIG. 2, and paragraph [0025]) for receiving satellite positioning system signals; a baseband back end (226, FIG. 2, and paragraph [0024]) comprising a baseband processing section (204, FIG. 2, and paragraph [0023]) and at least one address, data, and control line (222, FIG. 2, and paragraph [0024]) for communicating with a digital device; and an RF to baseband interface (206, FIG. 2 and paragraph [0023]) coupled between the RF processing section (202, FIG. 2, and paragraph [0023]) and the baseband processing section (204, FIG. 2, and paragraph [0023]), the interface comprising: a bi-directional message interface (208, FIG. 2, and paragraph [0028]) for communicating messages between the RF processing section (202, FIG. 2, and paragraph [0023]) and the baseband processing section (204, FIG. 2, and paragraph [0023]), including communicating a power control message (Tables 4 and 10 in specification and paragraphs [0054], [0063], [0066] and [0067]) to the RF processing section (202, FIG. 2, and paragraph [0023]), where the power control message (Tables 4 and 10 in specification and paragraphs [0054], [0063], [0066] and [0067]) is associated with power consumption (paragraph [0067]) of the RF processing section (202, FIG. 2, and paragraph [0023]); and a data interface (210, FIG. 2, and paragraph [0028])

for communicating data from the RF processing section (202, FIG. 2, and paragraph [0023]) to the baseband processing section (204, FIG. 2, and paragraph [0023]).

## VI. GROUNDS FOR REJECTION TO BE REVIEWED ON APPEAL

Claims 1-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over published U.S. published application no. 2002/0142741 to Molnar et al. (Molnar), U.S. patent no. 6,775,531 to Kaewell et al. (Kaewell) and 7,149,473 to Lindlar. One issue on appeal is whether the combination of Molnar, Kaewell and Lindlar renders claims 1-13 obvious.

Claims 14-20 and 22-33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Molnar in view of Kaewell, Lindlar and further in view of U.S. published application no. 2003/0107514 to Syrjarinne et al. (Syrjarinne). A second issue on appeal is whether the combination of Molnar, Kaewell, Lindlar and Syrjarinne renders claims 14-20 and 22-23 obvious.

Claim 21 stands rejected for non-statutory obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. patent no. 7,634,025 to Gronemeyer et al. (Gronemeyer) in view of Molnar. A third issue on appeal is whether the combination of claims 1-3 of Gronemeyer and Molnar renders claim 21 unpatentable for obviousness-type double patenting.

## VII. ARGUMENT

### A. Rejection of claims 1-13 over Molnar in view of Kaewell and Lindlar.

neither Molnar, Kaewall, Lindlar, nor their combination disclose or suggest,

> a bi-directional message interface for communicating a power control message from the baseband section to the RF section; and a data interface for communicating data from the RF section to the baseband section, wherein the RF section includes a register for receiving the power control message from the baseband section and wherein devices to be controlled by the power control message are coupled to the register to receive respective power control data from the received power control message,

as required by claim 1. Claim 8 includes similar limitations.

Molnar concerns a low-voltage digital interface between a baseband module and a radio-frequency integrated circuit (RFIC) of a wireless communication device.

In the Office Action, it is asserted that Molnar discloses a serial message interface for communicating a power control message from the baseband section to the RFIC that is associated with power consumption of the RFIC. Applicant respectfully disagrees. Molnar does not disclose or suggest sending any power control messages via the serial interface. In support of this assertion, the Examiner points to the Abstract and to paragraphs [0047], [0058], [0059], [0064], and [0072] of Molnar. These paragraphs describe either: 1) a power control method in which the entire radio frequency integrated circuit is "intermittently shutdown" (See Abstract), 2) control signals that constitute the serial interface (i.e. clock, data, latch enable) sent from the baseband module to control the serial interface of the RFIC (See paragraphs [0047], [0064] and [0072]) or 3) data sent from the serial interface to components in the RFIC. (See paragraph [0072]). None of these paragraphs disclose or suggest sending power control messages through the serial interface.

Molnar does not describe the types of messages that are sent via this interface but does indicate several functions of the RFIC that are controlled by the baseband section. The skilled person would understand that at least some of these functions are controlled by the control messages sent through the message interface. The functions of the RFIC that are controlled include the frequency at which the power amplifier operates (see paragraph [0050]), the gain of the low noise amplifier (see paragraph [0051]), whether the antenna is switched to transmit or receive (see paragraph [0052]) and the channel used to transmit or receive (see paragraph [0055]). Molnar does not disclose or suggest controlling power to any of the component devices of the RFIC except through the complete shutdown of the RFIC.

Indeed, Molnar teaches that power control of the RFIC and the other modules in the system is accomplished by the power module 206. For example, paragraph [0040] states:

> The module 206 is coupled to a power supply 210. The power supply 210 may be a battery or other power source and may be implemented as a power management integrated circuit (PMIC) on a single die. The power module 206 controls the power supply for all of the other components of the mobile communications device 22.

Similarly, the Abstract states: that the purpose of the second voltage level (VBO standby) is so that the "shifted control signal may be maintained at the component while the radio frequency integrated circuit is intermittently shutdown." This

passage indicates that the entire radio frequency integrated circuit is shut down except for the serial interface 332 and data latches 334. This understanding of the device described by Molnar is confirmed by the statement of the problem addressed by the invention in paragraph [0008],

> In order to conserve power, the radio frequency integrated circuit is typically shut down when it is not in use. ... When the radio frequency integrated circuit is powered up, the baseband module has to reconfigure the radio frequency integrated circuit. This results in a great deal of undesirable baseband module programming latency and excessive power consumption.

In addition, Molnar, at paragraph [0060] states,

> The low voltage digital interface results in overall power savings for the wireless communication device 22 because test registers and main registers within the radio frequency integrated circuit 338 need not be reprogrammed when powering up the radio frequency integrated circuit 338.

Contrary to the assertion by the Examiner, paragraph [0040] of Molnar, as well as the other cited passages, indicate that power control in the mobile communications device is accomplished using a power management integrated circuit (PMIC). From these passages, the skilled person would understand that the PMIC 206 autonomously controls power to the entire RFIC, except for the power signal VBO standby which retains the data in the serial interface when the RFIC is shutdown. There is no indication in Molnar that the baseband module sends any power control message to a register in the RFIC wherein devices to be controlled by the power control message are coupled to the register to receive respective power control data from the received power control message. Thus, the skilled person would not understand Molnar as sending power control messages from the baseband module to the power control module.

In response to Applicant's arguments, the Examiner asserts, "however, connection 326 clearly provide (sic) control signals that would control operating voltage Vco of RF components such as demodulator, synthesizer, upconverter, downconverter." Applicants respectfully disagree with this assertion. Connection 326 is the clock, data and latch enable (LE) signals that make up the serial interface between the baseband module and the RF module. There is no indication in Molnar that any of these signals or the data values sent via the data line control the power consumption of any component in the RF section except the serial interface. Indeed,

Fig. 4 shows details of the local level shifter (LLS) that is connected to each of the demodulator 384, downconverter 370, synthesizer 354 and modulator/up converter 344. As shown in Fig. 4, Vco is the power signal for the LLS. The output signal of the LLS is not a power signal, as asserted by the examiner but a data signal.

As described above, Molnar indicates that only the power control module 206 performs any power control function. Thus, there is no basis in Molnar to support the Examiner's assertion that Molnar discloses "a serial message interface for communicating a power control message from the baseband section to the RF section."

In the Advisory Action, the Examiner asserts that "although Molnar does not explicitly or clearly teach the power down operation of the LLS in [0060], the power down and power up operations of the LLS are clearly described by Kaewell." Applicant respectfully disagrees with this assertion.

Kaewell relates to a subscriber unit of a time-division multiple access (TDMA) radiotelephone system. Kaewell does not disclose or suggest "a serial message interface for communicating a power control message from the baseband section to the RF section." as required by claims 1, 8, 14, 22 and 29. At column 12, lines 21-36 and in Fig. 2, Kaewell describes a power control circuit 151 that receives four signals, indicating the state of the subscriber unit, and produces four power control signals for the RF Section. As this is a TDMA system, the power control signals have strict timing constraints. (See tables 1 and 2 and Figs. 5 and 6). Because of these constraints, one of ordinary skill in the art would not use a serial interface to transmit messages containing the power commands. First, as shown in Table 1 and Fig. 5, the timing of the switching of the power control signals must occur on a sub-millisecond basis and must be coordinated between the receive and transmit circuitry. It would be difficult to achieve this timing accuracy using a message that takes multiple clock cycles to transmit through a message interface. Second, Kaewell shows these power control signals as being transmitted using dedicated signal lines.

The skilled person would not modify Kaewell to replace these dedicated signal lines with a message facility such as that shown in Molnar because the timing of the

various signals could not be controlled with the precision required for TDMA operation. Thus, Kaewell does not provide the material that is missing from Molnar. Furthermore, if the message facility in Molnar were used to control power of components of the RFIC, it would defeat the purpose of Molnar. As described above, the data latches in Molnar remain powered up when the RFIC is shutdown to hold the configuration data while the RFIC is powered down. If the configuration data stored in these latches were the commands to power down components of the RFIC then the configuration data for the RFIC would need to be reloaded after the baseband module had reconfigured the components with a power up message. Thus, the combination of Molnar and Kaewell would defeat the purpose of Molnar. It is well settled that if a combination of references defeats the purpose of the primary reference then the combination is invalid.

> If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. [1]

Lindlar concerns an interface between baseband circuitry and RF circuitry in a Bluetooth device. The Lindlar system does not disclose or suggest "a serial message interface for communicating a power control message from the baseband section to the RF section." Instead, Lindlar teaches the use individual power control signals having dedicated signal lines. In the Office Action, two power control elements are identified 1) the signal SleepX which removes power from the entire RF section and 2) the signal PAON which controls power to the power amplifier 276. Neither of these signals is a part of a "message" as the term would be understood by a skilled person upon reading the subject patent application nor is it communicated from the baseband section to the RF section via "a serial message interface," as required by claims 1 and 8.

The signal SleepX in Lindlar is identified as a signal at column 2, lines 51-53. As shown in Figs. 1a and 1b of Lindlar, the SleepX signal is generated in the baseband circuitry 100, transmitted to the RF circuitry using a dedicated signal line 14 of the interface 10 between the baseband circuitry 100 and the RF circuitry 200. The signal SleepX is logically combined with signals internal to the RF circuitry 200 before being applied to the power supply regulator 240 and reference oscillator 250

in the RF circuitry 200. As shown in Fig. 1c, the signal PAON is provided via RF Bus2 in transmit mode and applied directly to the power amplifier 276. At column 7, lines 1-7, Lindlar identifies PAON as a signal and states that "[t]he switching on and off of the Power Amplifier is 'time critical' as it must be controlled over time scales of less than 1 bit duration." Thus, the skilled person would understand that the PAON signal could not be a part of a power control message communicated via a serial message interface from the baseband section to the RF section because such an interface could not meet these strict timing requirements. Accordingly, Lindlar teaches away from any combination with Molnar.

In the Office Action, it is asserted that "Lindlar does teach a bi-directional serial message interface for communicating data and control signals (i.e. data, status, an operation mode such as transmit mode, receive mode, or sleep mode) between the baseband section and the RF section (see Table 1, and col. 2, lines 18-58)." Applicant respectfully disagrees with this assertion inasmuch as it states that the sleep mode is controlled via the serial message. As disclosed in Lindlar, the bidirectional portion of the interface does not transfer any power control messages. There are two bidirectional lines, DBusDa and RFBus1. The only described power control signal in this interface is the signal SleepX, which, as described above, is a dedicated signal, and is unidirectional from the baseband section to the RF section. The functions of the DBus lines and RFBus lines are described at column 2, line 60 through column 5, line 21. None of these functions is a power control function. Thus, the Lindlar reference does not disclose or suggest a bidirectional message interface for communicating a power control message from the baseband section to the RF section and, so, can not provide the material that is missing from Molnar and Kaewell.

Claim 1 further recites, that the "the RF section includes a register for receiving the power control message from the baseband section and wherein devices to be controlled by the power control message are coupled to the register to receive respective power control data from the received power control message." Similarly, claim 8 recites, "storing the power control message in a register internal to the RF section wherein devices to be controlled by the power control message are coupled to

---

[1] MPEP §2143.01(VI) quoting *In re Ratti*, 123 USPQ 349 270 F.2d 810 (CCPA 1959)

the register to receive respective power control data from the stored power control message." Neither Molnar, Kaewell, Lindlar nor their combination disclose or suggest such a register which stores a power control message wherein the devices to be controlled by the power control message are coupled to the register to receive respective power control data. This register, which stores the message provided by the baseband section according to the subject application, illustrates the difference between a message according to claims 1 and 8 of the subject invention, and the signals used in Lindlar.

Using a message to transfer power control messages rather than dedicated signal lines or a separate power control module has the advantage of reducing the number of signal lines between the baseband and RF sections. In Lindlar, separate signal lines are required for the SleepX and PAON signals. In Kaewell, dedicated signal lines are used to convey the power control signals Tx, Rx, LB and PAEN. Power control of more than one device in the RF section, according to Lindlar or Kaewell, would require a separate signal line for each device. According to the subject invention, however, power control messages are sent between the baseband and RF sections via a single message interface and are received by a register. The devices to be controlled by the power control message are coupled to the register to receive respective power control data from the received power control message.

In the Office Action dated July 2, 2010, at page 13, the examiner asserts that "although 'message' and 'signal' are two different terminologies, they are both meaning the same for Molnar and the claimed invention because they both provide control bits in a message/signal to a serial interface for controlling power of RF components." Applicant notes that pursuant to MPEP section 2181, "claim language must be analyzed not in a vacuum but in light of: (A) the content of the particular application disclosure; (B) the teachings of the prior art; and (C) the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made." As set forth above, the claims explicitly recite "a power control **message**," also as set forth above, there are significant differences between messages and signals. As described above, in Molnar, the message interface is used to configure the RF unit, not to control its power state. In Kaewell and Lindlar, signals are used to control power due to the timing constraints on switching on and off the devices in the RF section. Thus,

"message" and "signal" are different concepts and may not be conflated. Consequently, in view of the teachings of the specification, the words used in the claim, and the teachings of Kaewell and Lindlar, the Examiner is not entitled to ignore the word "message" when interpreting the claim.

Furthermore the Examiner has not provided any "articulated reasoning with rational underpinning" to support the modification of Molnar by Kaewell and Lindlar.[2] Indeed, the Examiner has not provided any reason why a skilled person would modify Molnar to include the teachings of Kaewell and Lindlar. Thus, the Examiner has failed to properly state a case of *prima facie* obviousness and the combination of Molnar and Kaewell is improper. (See MPEP § 2142).

**B. Rejection of claims 7 and 10 in view of Molnar and Kaewell.**

Claim 7 further defines the message interface as including "a message-in signal line, a message-out signal line and a message clock signal line." Similarly, claim 10 recites that "the step of communicating comprises the step of serially communicating the power control message using a message-in signal line, a message-out signal line and a message clock signal line." The serial interface in Molnar includes only one data line, which corresponds to the message out signal line of the subject invention as defined by claims 7 and 10. Molnar does not disclose or suggest a message interface including both a message-out signal line and a message in signal line. Kaewell does not disclose any message interface and, so, can not provide the material that is missing from Molnar. Lindlar discloses a single bidirectional control signal line DBusDa rather than the separate message-in and message-out signal lines required by claims 7 and 10. Thus, the subject invention as defined by claims 7 and 10 is patentable over Molnar, Kaewell and Lindlar for reasons independent of claim 1.

---

[2] [R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. 550 US 398 at 418 (2007) (citing In re Kahn, 441 F.3d at 988 82 USPQ2d at 1396. MPEP 2141 (III)

**C. Rejection of claims 14-20 and 22-33 in view of Molnar, Kaewell, Lindlar and Syrjarinne.**

Claims 14, 22 and 28 include limitations similar to those described above with reference to claims 1 and 8. Accordingly, claims 14, 22 and 28 are not subject to rejection under 35 U.S.C. § 103(a) in view of Molnar, Kaewell and Lindlar for at least the reasons set forth above. In particular, neither Molnar, Kaewell, Lindlar nor their combination disclose or suggest,

> a bi-directional message interface for communicating messages between the RF processing section and a baseband processing section, including receiving a power control message from the baseband processing section wherein the power control message is associated with power consumption of the RF processing section, wherein the RF section includes a register for receiving the power control message from the baseband section and wherein devices to be controlled by the power control message are coupled to the register to receive respective power control data from the received power control message,

as required by claim 14. Claims 22 and 28 include similar recitations.

Syrjarinne was cited as disclosing a GPS receiver. In addition, in the Office Action, it is asserted that Syrjarinne discloses a low power standby mode for the GPS receiver for power saving. The power control in Syrjarinne, however, is implemented using a power control module that monitors the mode mix provided by the mode selector to define appropriate on-off duty cycles for the RF front end and baseband processor. The power control is implemented entirely in the power control module (See paragraphs [0030] and [0039]-[0043]). Syrjarinne, like Molnar, discloses only shutting down the entire RF front end. While paragraphs [0040] and [0041] of Syrjarinne appear to disclose selectively powering down components of the GPS receiver, there is no suggestion that any of these components would be internal to the RF front end. Indeed, the RF front end is regarded as a single component by Syrjarinne. In paragraph [0040], for example, Syrjarinne discloses that, when a poor constellation exists, hardware used or provide any channels not being used to track satellites because of a poor constellation, can be powered down and not powered up until the constellation improves. This statement in Syrjarinne indicates that the entire RF front end would be shut down until the constellation improves.

Thus, the combination of Molnar, Kaewell, Lindlar and Syrjarinne can not disclose or suggest:

> a bi-directional message interface for communicating messages between the RF processing section and a baseband processing section, including receiving a power control message from the baseband processing section wherein the power control message is associated with power consumption of the RF processing section, wherein the RF section includes a register for receiving the power control message from the baseband section and wherein devices to be controlled by the power control message are coupled to the register to receive respective power control data from the received power control message,

as required by claims 14, 22 and 28. Consequently, Syrjarinne can not provide the material that is missing from Molnar, Kaewell and Lindlar.

Furthermore, the Examiner has not provided any "articulated reasoning with rational underpinnings" to support the combination of Syrjarinne with any of the other references. Thus, the Examiner has failed to state a *prima facie* case of obviousness. The statement supporting the combination of Molnar, Kaewell, Lindlar and Syrjarinne is a mere conclusory statement that Molnar would use Syrjarinne's device to obtain GPS navigation capability. This statement does not describe how or why the skilled person would integrate the GPS capabilities of Syrjarinne with the communication devices of Molnar, Kaewell and Lindlar or why such a combination would be successful.

Because neither Molnar, Lindlar, Kaewell nor Syrjarinne either alone or in combination disclose or suggest these limitations of claims 14, 22 and 28 and because claims 14-20 depend from claim 14; claims 23- 27 depend from claim 22 and claims 29- 33 depend from claim 28, these claims are not subject to rejection under 35 U.S.C. § 103(a) in view of Molnar, Kaewell, Lindlar and Syrjarinne.

**D. Rejection of claims 15, 23 and 29 in view of Molnar, Kaewell, Lindlar and Syrjarinne.**

Claims 15, 23 and 29 further define the message interface as including "a message clock line, a message-in signal line and a message-out signal line." The serial interface in Molnar includes only one unidirectional data line, which

corresponds to the message out signal line of the subject invention as defined by claims 15, 23 and 29. Similarly, Syrjarinne shows a single unidirectional control signal line between the baseband processor and the RF front end. Thus, neither Molnar nor Syrjarinne disclose or suggest a message interface including both a message-out signal line and a message in signal line. Kaewell does not disclose any message interface and, so, can not provide the material that is missing from Molnar. Lindlar discloses a single bidirectional control signal line DBusDa rather than the separate message-in and message-out signal lines. required by claims 7 and 10. Thus, the subject invention as defined by claims 15, 23 and 29 is patentable over Molnar, Kaewell and Lindlar for reasons independent of claims 14, 22 and 28.

**E. Rejection of claim 21 for nonstatutory obviousness-type double patenting in view of claims 1-3 of U.S. patent no. 7,634,025 and Molnar.**

Claim 21 is not subject to rejection for nonstatutory obviousness-type double patenting in view of claims 1-3 of Patent no. 7,634,025 and Molnar. In the Office Action dated July 2, 2010, it is admitted that claims 1-3 of Patent no. 7,634,025 do not include a register to receive power control messages from a baseband unit. The Office Action cited Molnar as disclosing this feature. As set forth above, however, this feature is not disclosed or suggested by Molnar. Contrary to the Examiner's assertion, Molnar does not disclose or suggest any register that receives power control messages. Applicant further notes that, as described above, while Molnar does disclose a serial message interface, it does not disclose communicating power control messages from the baseband section to the RF section using this interface. This limitations is also absent from claims 1-3 of U.S. Patent no. 7,634,025. Consequently, claim 21 is not subject to rejection for nonstatutory obviousness-type double patenting in view of claims 1-3 Patent no. 7,634,025 and Molnar.

**Conclusion**

Appellant has advanced reasons demonstrating that the disclosures of Molnar, Kaewell, Lindlar and Syrjarinne either alone or in combination are insufficient as a basis for an obviousness rejection of the pending claims. Accordingly, Appellant respectfully requests the Board's reversal of these rejections.

Respectfully submitted,

Kenneth N. Nigon, Reg. No. 31,549
Attorney for Applicant

Dated: December 22, 2010

P.O. Box 980
Valley Forge, PA 19482-0980
(610) 407-0700

The Director is hereby authorized to charge or credit Deposit Account No. **18-0350** for any additional fees, or any underpayment or credit for overpayment in connection herewith.

## APPENDIX

1. (Previously Presented) A radio frequency (RF) to baseband interface providing power control over an RF section that processes RF signals and that is coupled to a baseband section that processes baseband signals, the interface comprising:

a bi-directional message interface for communicating a power control message from the baseband section to the RF section; and a data interface for communicating data from the RF section to the baseband section, wherein the RF section includes a register for receiving the power control message from the baseband section and wherein devices to be controlled by the power control message are coupled to the register to receive respective power control data from the received power control message; and

a data interface for communicating data from the RF section to the baseband section.

2. (Original) The interface of claim 1, where the power control message comprises a power control bit specifying a power state for pre-selected circuitry in the RF section.

3. (Original) The interface of claim 2, where the power state is one of a power-up state and a power-down state.

4. (Original) The interface of claim 1, where the power control message comprises a plurality of power control bits individually specifying power states for a plurality of pre-selected circuitry in the RF section.

5. (Original) The interface of claim 2, where the pre-selected circuitry is at least one of a frequency divider, oscillator, and amplifier.

6. (Original) The interface of claim 1, where the message interface is a serial message interface.

7. (Original) The interface of claim 1, where the message interface comprises a message-in signal line, a message-out signal line and a message clock signal line.

8. (Previously Presented) A method for controlling power in a radio frequency (RF) section that processes RF signals and that is coupled to a baseband section that processes baseband signals, the method comprising the steps of:

setting a power control bit in a power control message;

communicating the power control message over a message interface from the baseband section to the RF section where the power control message is associated with power consumption of the RF section; and

storing the power control message in a register internal to the RF section wherein devices to be controlled by the power control message are coupled to the register to receive respective power control data from the stored power control message.

9. (Original) The method of claim 8, wherein the step of communicating comprises the step of serially communicating the power control message.

10. (Original) The method of claim 8, wherein the step of communicating comprises the step of serially communicating the power control message using a message-in signal line, a message-out signal line and a message clock signal line.

11. (Original) The method of claim 8, where the power control bit specifies a power state for pre-selected circuitry in the RF section.

12. (Original) The method of claim 11, where the power state is one of a power-up state and a power-down state.

13. (Original) The method of claim 8, where the step of setting comprises the step of setting a plurality of power control bits individually specifying power states for a plurality of pre-selected circuitry in the RF section.

14. (Previously Presented) An RF front end for a satellite positioning system receiver, the front end comprising:

an RF processing section comprising an RF input for receiving satellite positioning system signals; and

an RF to baseband interface coupled to the RF processing section, the interface comprising:

a bi-directional message interface for communicating messages between the RF processing section and a baseband processing section, including receiving a power control message from the baseband processing section wherein the power control message is associated with power consumption of the RF processing section, wherein the RF section includes a register for receiving the power control message from the baseband section and wherein devices to be controlled by the power control message are coupled to the register to receive respective power control data from the received power control message; and

a data interface for communicating data from the RF processing section to the baseband processing section.

15. (Original) The RF front end of claim 14, wherein the message interface comprises:

a message clock line;

a message-in signal line and

a message-out signal line; and

wherein the message-out signal line carries an output bit stream representing the power control message.

16. (Original) The RF front end of claim 15, where the power control message comprises a power control bit specifying a power state for pre-selected circuitry in the RF section.

17. (Original) The RF front end of claim 16, where the power state is one of a power-up state and a power-down state.

18. (Original) The RF front end of claim 15, where the power control message comprises a plurality of power control bits individually specifying power states for a plurality of pre-selected circuitry in the RF section.

19. (Original) The RF front end of claim 15, where the pre-selected circuitry is at least one of a frequency divider, oscillator, and amplifier.

20. (Original) The RF front end of claim 15, where the data interface comprises a data clock signal line and a data bit signal line.

21. (Original) The RF front end of claim 20, where:

the data clock signal line carries a data clock comprising a rising edge and a falling edge;

the data bit signal line carries a data signal comprising a sign bit and a magnitude bit; and

the first data bit is valid on the rising edge of the data clock and the second data bit is valid on the falling edge of the data clock.

22. (Previously Presented) A baseband back end for a satellite positioning system receiver, the back end comprising:

a baseband processing section comprising at least one address, data, and control line for communicating with a digital device; and

an RF to baseband interface coupled to the baseband processing section, the interface comprising:

a bi-directional message interface for communicating messages between an RF processing section and the baseband processing section, including communicating a power control message to the RF processing section where the power control message is associated with power consumption of the RF processing section, wherein the RF processing section

includes a register for receiving the power control message from the baseband section and wherein devices to be controlled by the power control message are coupled to the register to receive power control data; and

a data serial interface for communicating data from the RF processing section to the baseband processing section.

23. (Original) The baseband back end of claim 22, wherein the message serial interface comprises:

a message clock line;

a message-in signal line and

a message-out signal line; and

wherein the message-out signal line carries an output bit stream representing the power control message.

24. (Original) The baseband back end of claim 22, where the power control message comprises a power control bit specifying a power state for pre-selected circuitry in the RF processing section.

25. (Original) The baseband back end of claim 24, where the power state is one of a power-up state and a power-down state.

26. (Original) The baseband back end of claim 22, where the power control message comprises a plurality of power control bits individually specifying power states for a plurality of pre-selected circuitry in the RF section.

27. (Original) The baseband back end of claim 26, where the pre-selected circuitry is at least one of a frequency divider, oscillator, and amplifier.

28. (Previously Presented) A satellite positioning system receiver comprising:

an RF front end comprising an RF processing section and an RF input for receiving satellite positioning system signals;

a baseband back end comprising a baseband processing section and at least one address, data, and control line for communicating with a digital device; and

an RF to baseband interface coupled between the RF processing section and the baseband processing section, the interface comprising:

a bi-directional message interface for communicating messages between the RF processing section and the baseband processing section, including communicating a power control message to the RF processing section where the power control message is associated with power consumption of the RF processing section, wherein the RF section includes a register for receiving the power control message from the baseband section and wherein devices to be controlled by the power control message are coupled to the register to receive power control data; and

a data interface for communicating data from the RF processing section to the baseband processing section.

29. (Original) The satellite positioning system receiver of claim 28, wherein the message interface comprises:

a message clock line;

a message-in signal line and

a message-out signal line; and

wherein the message-out signal line carries an output bit stream representing the power control message.

30. (Original) The satellite positioning system receiver of claim 29, where the power control message comprises a power control bit specifying a power state for pre-selected circuitry in the RF processing section.

31. (Original) The satellite positioning system receiver of claim 30, where the power state is one of a power-up state and a power-down state.

32. (Original) The satellite positioning system receiver of claim 29, where the power control message comprises a plurality of power control bits individually specifying power states for a plurality of pre-selected circuitry in the RF section.

33. (Original) The satellite positioning system receiver of claim 32, where the pre-selected circuitry is at least one of a frequency divider, oscillator, and amplifier.

## VIII. Evidence Appendix

None

## IX. Related Proceedings Appendix

None